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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,079	03/22/2004	Yoji Taniguchi	0828.70119	1387

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EXAMINER	
NGUYEN, THANH NHAN P	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/806,079	TANIGUCHI ET AL.	
	Examiner	Art Unit	
	(Nancy) Thanh-Nhan P. Nguyen	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/22/2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Amendment dated 9/22/2005.

2. Claims 6-8 are newly added; accordingly, claims 1-8 are pending for the examination.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the hole-filling columnar layer portions fill ones of the recesses other than the predetermined number of the recesses" in claim 7 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 1 is objected to because of the following informalities: Claim 1 currently read as, "... one of the pixel electrodes of the thin film transistor substrate and the pixel electrodes of the counter substrate." It appears it should have read as, "... one of the pixel electrodes of the thin film transistor substrate and the counter electrodes of the counter substrate."

Claims 6 & 8 are objected to because of the following informalities: claims 6 & 8 currently read as, "... a protrusion for controlling... where the slit is not provided..." It appears it should have read as, "... a protrusion for controlling... where the protrusion is not provided..." and has been examined accordingly.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 7, "the hole-filling columnar layer portions fill ones of the recesses other than the predetermined number of the recesses" makes the claim unclear. According to claim 2, from which claim 7 is dependent on, the recesses are the

contact holes formed for connecting the thin film transistors and the associated pixel electrodes. Therefore, Examiner does not see any other recesses other than the predetermined recesses, namely contact holes, so that the hole-filling layers could fill those other recesses. Therefore, for the examination purpose, claim 7 will be interpreted as, "wherein the hole-filling columnar layer portions fill the predetermined number of the recesses."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 4, 6 & 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida U.S. Patent Application Publication No. 2002/0008819 in view of Ogishima et al U.s. Patent Application Publication No. 2002/0149728.

Regarding claims 1 & 8, Yoshida discloses a liquid crystal panel including a thin film transistor substrate (23) formed with thin film transistors (27) for driving pixel electrodes, a counter substrate (41) provided in a manner opposed to thin film transistor substrate, and a liquid crystal layer (14) sandwiched between the thin film transistor substrate and the counter substrate; the liquid crystal panel comprising: hole-filling columnar layer portions (36) for filling recesses (34) produced by forming the pixel electrodes (32) in contact holes (34) each formed for connecting each of the thin film transistors and an associated one of the pixel electrodes to each other; and cell gap-

maintaining columnar layer portions (47) for maintaining a cell gap between the thin film transistor substrate and the counter substrate, [see fig. 1].

Yoshida lacks disclosure of a protrusion or a slit for controlling orientation of liquid crystal molecules at one of the pixel electrodes of the thin film transistor substrate and the counter electrodes of the counter substrate, wherein the protrusion is not provided for both the pixel electrodes of the thin film transistor substrate and the counter electrodes of the counter substrate.

It was well know to have a protrusion or a slit for controlling orientation of liquid crystal molecules at one of the pixel electrodes of the thin film transistor substrate and the counter electrodes of the counter substrate, wherein the protrusion is not provided for both the pixel electrodes of the thin film transistor substrate and the counter electrodes of the counter substrate, as evidenced by Ogishima et al, [see fig. 2A-2B: element '16']. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have a protrusion or a slit for the benefit of controlling orientation of liquid crystal molecules at one of the pixel electrodes of the thin film transistor substrate and the counter electrodes of the counter substrate, wherein the protrusion is not provided for both the pixel electrodes of the thin film transistor substrate and the counter electrodes of the counter substrate.

Claim 3 is met the discussion regarding claim 1 rejection above together with figs. 3-6. Moreover, the step of forming hole-filling columnar layer portions and cell gap-maintaining columnar layer portions simultaneously is supported in paragraph [0056].

Regarding claim 4, Yoshida discloses the step of simultaneously forming hole-filling columnar layer portions for filling recesses produced by forming the pixel electrodes in contact holes each formed for connecting each of the thin film transistors and an associated one of the pixel electrodes to each other, and cell gap-maintaining columnar layer portions for maintaining a cell gap between the thin film transistor substrate and the counter substrate, [figs. 3-6; par. 0056], includes exposing a photosensitive resin formed on an entire surface of the thin film transistor substrate to light, to leave behind areas form forming the hole-filling columnar layer portions therein, and areas for forming the cell gap-maintaining columnar layer portions therein, for simultaneous formation of the hole-filling columnar layer portions and the cell gap-maintaining columnar layer portions, which are made of the photosensitive resin, [figs. 5-6; pars. 0055-0058].

Claim 6 is met the discussion regarding claims 3 & 8 rejection above.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of Ogishima et al as discussed above, and further in view of Kurauchi et al U.S. Patent No. 5,917,572.

Regarding claim 5, Yoshida lacks discloses of the step of forming one color filter layer on the thin film transistor substrate or the counter substrate, and laminating another color filter on the one color filter layer at areas corresponding to associated ones of the areas for forming the cell gap-maintaining columnar layer portions.

Kurauchi et al discloses the step of forming one color filter layer on the counter substrate, and laminating another color filter on the one color filter layer at areas

corresponding to associated ones of the areas for forming the cell gap-maintaining columnar layer portions, [see fig. 14], for the benefit of providing a color liquid crystal display device capable of showing a high manufacturing yield, [see col. 2, lines 34-36], as well as being feasible to provide the inexpensive liquid crystal display device exhibiting a high display performance in terms of contrast and brightness, [see col. 12, lines 43-46]. Therefore, at the time the invention was made, it would have been obvious to one ordinary skill in the art to form one color filter layer on the thin film transistor substrate or the counter substrate, and laminating another color filter on the one color filter layer at areas corresponding to associated ones of the areas for forming the cell gap-maintaining columnar layer portions for the benefit of providing a color liquid crystal display device capable of showing a high manufacturing yield as well as being feasible to provide the inexpensive liquid crystal display device exhibiting a high display performance in terms of contrast and brightness.

Claims 2 & 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida U.S. Patent Application Publication No. 2002/0008819 in view of Yang et al U.S. Patent Application Publication No. 2004/0189928.

Regarding claims 2 & 7, Yoshida discloses a liquid crystal panel including a thin film transistor substrate (23) formed with thin film transistors (27) for driving pixel electrodes, a counter substrate (41) provided in a manner opposed to thin film transistor substrate, and a liquid crystal layer (14) sandwiched between the thin film transistor substrate and the counter substrate; the liquid crystal panel comprising: hole-filling columnar layer portions (36) for filling recesses (34) produced by forming the pixel

electrodes (32) in contact holes (34) each formed for connecting each of the thin film transistors and an associated one of the pixel electrodes to each other; and cell gap-maintaining columnar layer portions (47) for maintaining a cell gap between the thin film transistor substrate and the counter substrate, [see fig. 1].

Yoshida lacks disclosure of wherein the cell gap-maintaining columnar layer portions are formed in a predetermined number of the recesses and maintain the cell gap between the thin film transistor substrate and the counter substrate.

Yang et al discloses the cell gap-maintaining columnar layer portions (440a) are formed in a predetermined number of the recesses (810) and maintain the cell gap between the thin film transistor substrate (100) and the counter substrate (200), [see fig. 2], for the benefit of minimizing the amount of light blocked in the device, [see abstract]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the cell gap-maintaining columnar layer portions are formed in a predetermined number of the recesses and maintain the cell gap between the thin film transistor substrate and the counter substrate for the benefit of minimizing the amount of light blocked in the device.

Response to Arguments

1. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

2. Applicant's argument: On the Remarks, page 7, "Dependent claim 4 recites an exposing step by a photo mask for filling the hole at the contact hole, ... This feature is also not found in the cited reference..."

Examiner's response: The reference did support for rejection claim 4 limitation, and Examiner did cite figs. 3-6 and pars. 0055-0058 when rejecting the claim. Please refer back to previous office action to see.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Nancy) Thanh-Nhan P. Nguyen whose telephone number is 571-272-1673. The examiner can normally be reached on M-F/9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

(Nancy) Thanh-Nhan P Nguyen
Examiner
Art Unit 2871
-- December 5, 2005 --

TN

ANDREW SCHECHTER
PRIMARY EXAMINER